

REMARKS

By this amendment, claims 1-7, 10, 11, and 14 have been amended, and claims 15 and 16 have been added. Accordingly, claims 1 - 16 are currently pending in the application, of which claims 1 and 6 are independent claims.

Applicants respectfully submit that the above amendment does not add new matter to the application and is fully supported by the specification. In view of the above amendments and the following Remarks, Applicants respectfully request reconsideration and timely withdrawal of the pending rejections for the reasons discussed below.

Rejection under 35 U.S.C. §102

The Office Action rejects Claims 1, 4, 5 and 9 under 35 U.S.C. §102 (b) over U.S. Patent No. 5,870,132 to Inoue, et al. ("Inoue"). This rejection is respectfully traversed.

Independent Claim 1, sets forth, in part, a multiple beam scanning device having an array light source including at least a first and a second sub-array light source, the second sub-array light source being used whereas the first sub-array light source remains unused, the second sub-array light source being configured to emit a plurality of light beams with independently modulatable light intensity, wherein the first sub-array light source may be functionally substituted for the second sub-array light source.

Inoue sets forth a laser beam scanning image forming apparatus having two-dimensionally disposed light emitting portions. The light emitting portions of Inoue are disposed two-dimensionally on a surface of a semiconductor laser array where the amount of light of the light emitting portions is discretely controlled by a control unit.

Figure 1 of Inoue shows a scanning unit 53 having a laser array 21 with light emitting portions 21A. The amount of light of each of the emitting portions 21A is discretely controlled by a control unit 60. Light from the laser array 21 passes through a collimator lens 2 and onto a rotating polygon mirror 3. The light is reflected from the rotating polygon mirror 3 through an image forming lens 4 to fall on a image bearing member 5. The light from the laser array 21 forms spots 6 on the image bearing member 5 where the spots 6 are swept across the image bearing member 5 by the rotating polygon mirror 3 to form scanning lines 9 on the image bearing member 5. The scanning lines 9 are formed on the image bearing member 5 while the image bearing member 5 is rotated and a series of scanning lines 9 are formed across the surface of the image bearing member 5.

It should be noted that the laser array 21 includes multiple light emitting portions 21A where each light emitting portion 21A is from a laser beam. In Figure 1, each of the light emitting portions 21A is two-dimensionally disposed on the laser array 21 forming two rows and two columns where each row and each column has a total of two light emitting portions.

Consequently, the laser array 21 has a total of four light emitting portions 21A. Each light emitting portion 21A is simultaneously used to form for scanning lines 9 on the image bearing member 5 at the same time, with no light emitting portion 21A able to functionally substitute for another light emitting portion 21A. As such, Inoue shows all the light emitting portions of the laser array in use at one time and fails to show an array light source including at least a first and a second sub-array light source . . . wherein the first sub-array light source may be *functionally substituted* for the second sub-array light source, as set forth in claim 1.

Accordingly, Applicants respectfully assert that claim 1 is allowable over Inoue.

Claims 4, 5 and 9 are allowable at least for the reasons discussed above with respect to independent claim 1, from which they depend, as well as for their added features. Applicants respectfully request that the rejection of claims 1, 4, 5 and 9 be withdrawn.

Rejection under 35 U.S.C. §103

The Office Action rejects claims 2-8 and 10-14 under 35 U.S.C. §103(a) over Inoue in view of U.S. Patent 6,252,622 to Laberge (“Laberge”). This rejection is respectfully traversed.

Laberge is directed to a fault tolerant laser diode array having a fault tolerant recording system using a pair of laser diode arrays. The laser diode arrays are a pair of monolithic laser diodes made of individually addressable diodes used to record parallel tracks on a recording surface. A pair of diodes (one diode from each array) are assigned to each track, but only one diode (the primary diode) is initially activated. In the case where the primary diode fails, a secondary diode is activated. Digital delays are employed to synchronize the data from the two diodes to accommodate the offset between the primary diode and the secondary diode so that the written marks on the recording surface remain in alignment when the secondary diode is activated.

Contrary to either Inoue or Laberge, independent claim 6, sets forth, in part, a multiple beam scanning device having an array light source including at least a first and second sub-array light source, the second sub-array light source being used whereas the first sub-array light source remains unused, the second sub-array light source being configured to emit a plurality of light beams with independently modulatable light intensity wherein a first sub-array light source may be functionally substituted for a second sub-array light source of the plurality of sub-array light sources.

Referring to Laberge Figure 3, a first diode array 1 and a second diode array 3 are positioned parallel to one another. Each diode array is connected to a heat sink 2 and 4. The diode arrays 1 and 3 together produce parallel tracks 7. The first diode array 1 and the second diode array 3 are arranged with respect to one another so that a single diode in one diode array can be functionally substituted for a corresponding single diode in second diode array.

In operation, when a primary diode located in the first diode arrays fails, a second diode from the second diode array is switched into the circuit to substitute for the primary diode. Accordingly, individual diodes are discretely substituted for one another rather than substituting one array for the other array.

In other words, Laberge shows discretely substituting one diode for another diode, and thus fails to show or suggest a multiple beam scanning device having, in part, an array light source including a plurality of a sub-array light sources, . . . wherein a first sub-array light source may be functionally substituted for a second sub-array light source of the plurality of sub-array light sources, as set forth in claim 6. Furthermore, as discussed above, Inoue fails to show or suggest an array light source including at least a first and a second sub-array light source . . . wherein the first sub-array light source may be functionally substituted for the second sub-array light sources, as set forth in claim 1.

Accordingly, Laberge fails to cure the deficiencies of Inoue, and both claims 1 and 6 distinguish over the combination of Inoue and Laberge. Claims 2, 5, and 7-8, and 10-14 are allowable at least for the reasons discussed above with respect to independent claims 1 and 6, from which they respectfully depend, as well as for their added features. Applicants respectfully request that the rejection of claims 2-8 and 10-14 be withdrawn.

Other Matters

By this Amendment, new claims 15 and 16 are added. Claim 15 depends from independent claim 1 and claim 16 depends from independent claim 6. New claims 15 and 16 add no prohibited new matter and are submitted to be allowable.

CONCLUSION

Applicants have made a sincere effort to place the present application in condition for allowance and believe that they have now done so. Applicants have pointed out the specific language of Applicants' claims that define over the references of record and respectfully request an indication to such effect, in due course.

The amendments to the claims made in this amendment that have not been made to overcome the prior art, should be considered to have been made for a purpose unrelated to patentability, and no estoppel should be deemed to attach thereto.

Should there be any questions, the Examiner is invited to contact the undersigned at the below-listed telephone number.

Respectfully submitted,



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